CASES/TRENDS

Promoting education for sustainable development in the Maldives: Exploring the link between theory and practice

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Abstract This article explores the critical role of education in promoting sustainable development in the Maldives context. It presents the outcomes of a small-scale project, Playing with Solar, implemented in a small island school in collaboration with the island community. Because of the environmental and educational principles embedded in this project, it is presented as one that prioritizes sustainable development, actively engages with the community, and aligns with the key competencies underpinning the Maldives National Curriculum Framework. The Playing with Solar project is an example of transformative pedagogy aligned with sustainable development. By promoting problem-based learning, the project shows how key competencies and pedagogical principles can be operationalized in line with National Curriculum Framework syllabi that promote interdisciplinary learning, in contrast to textbook-based, transmission models of teaching.

Keywords Climate change · Sustainable development · Curriculum · Small island states · Problem-based learning · Maldives

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In 2011, the president of the Maldives, Mohammed Nasheed, highlighted the nation's environmental vulnerability by holding an underwater cabinet meeting, an event that attracted worldwide attention. The link between highlighting the country's vulnerability and assigning political priority to climate-change adaptation policies may be defined as "the common legacy" (Malatesta and Schmidt di Friedberg 2017) of all the governments of the Maldives between the last years of Maumoon Abdul Gayoom's presidency (2006-2007) and the beginning of Mohamed Nasheed's in 2008. In the Maldives, the fight against climate change has acted both as "the" guiding framework for environmental and development policies (Malatesta 2018) and "as an agent of national cohesion, going right back to the opening speech of President Maumoon Abdul Gayoom at the United Nations General Assembly on Environment and Development in 1987" (Malatesta and Schmidt di Friedberg 2017, p. 62). This action sought to emphasize the consequences of climate change and, as Crossley and Sprague (2014, p. 86) attest, the "dramatic implications for small island developing states".

As a low-lying, environmentally fragile archipelago, the Maldives faces serious challenges due to climate change—like many other small island states (SIS). Its two main industries, tourism and fishing, rely on a healthy environment. Because of its physical characteristics and dependence on tourism and imports, sustainable development is critical to the Maldives' future. In addition, beyond the threat to its existence of climate change, Maldivian citizens, like all island populations, cope with a set of local socio-environmental challenges, namely, energy production, waste management, drinking water supply, food security, and land reclamation (Malatesta 2021) involving all levels of public and private life.

Moreover, "the discourse on the Maldives" around environmental vulnerability coexists, on the inhabited islands, with a set of critical environmental processes pervading local communities. Further, at the political level, "this dialectic is reflected in the tension between the primacy of the Climate Change Adaptation (CCA) framework and the quest for actions, tools, and projects to enhance the practices and knowledge of local human systems" (Malatesta and Schmidt di Friedberg 2017, p. 54).

This background justifies an integrated approach to environmental issues, one that recognizes the need for environmental awareness and identifies the critical role of education in promoting sustainable development. According to Grosseck et al. (2019), without focusing on education for sustainable development (ESD), we cannot create a sustainable future. This is supported by Hiebert (2013), who writes that education is an essential element in the global response to environmental challenges. Sustainable development has become a global priority, epitomized in the Sustainable Development Goals (SDGs). Yet, as Crossley and Sprague (2014) argue, the existing literature relating to sustainable development in SIS is limited in scope and rarely addresses the educational implications of sustainable development in significant depth.

In this article, we explore ESD within the Maldives context. We present the outcomes from a small-scale ESD project that was implemented within a small island school in collaboration with the community. We specifically consider the notion of ESD within the framework of the SDGs, in particular Goal 4—promoting a quality education. An overview of the Maldives' education system provides the context for exploring an environmental education project to promote active learning approaches within the island context. This project presents an example of what is possible, provides the promise of further promoting ESD in the country, and gives voice to a small island developing state in this era of SDGs.

Education for sustainable development

Within the SDG, Goal 4 focuses on improving the quality of education, and Target 4.7 specifically refers to ESD. Both sustainability and sustainable development are widely debated and deconstructed concepts (often paradigms) within international literature. In this contribution, we do not systematically address this debate. ESD and Sustainable Development (SD) are used according to the official documents quoted here (UNESCO 2014, 2017), which made a crucial contribution in constructing a common framework for social sciences, politics, and civil society. ESD and SD should, therefore, be read with their formal and "technical" formulation in mind. In this article, we consider ESD in its broadest form by advocating a transformative approach to education that embraces interactive, learner-centered teaching and learning (UNESCO 2017, p. 7), as well as attention to environmental education and sustainable practices. ESD can be conceptualized as follows:

> ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning and is an integral part of quality education. ESD is holistic and transformational education, which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society. (UNESCO 2017, p. 7)

This definition prioritizes two related aspects within education: (1) the learning content and (2) the pedagogy and learning environment. The content focuses on issues such as climate change, sustainable practices, biodiversity, and disaster risk management within the curriculum. The pedagogy encompasses learner-centered teaching approaches that enable interactive, action-oriented, transformative teaching (McNaughton 2012; UNESCO 2017). Laurie et al. (2016, p. 227) reinforced the breadth of the concept of ESD in a recent review:

> Today's education requires knowing what to do with information, that is, how to analyse it; make sense of its abundance and complexity; cooperate with others to synthesize information; and communicate the results. Consequently, quality education is no longer based primarily on fact acquisition.

ESD therefore promotes particular pedagogies where students are stimulated to ask and answer questions, think critically, and analyze information. Consequently, with a focus on learner-centered pedagogies (LCP), a shift is needed from rote memorization to participatory learning. As such, ESD orients education outcomes toward developing knowledge and skills to problem-solve, manage ambiguity and uncertainty, and promote lifelong learning.

ESD is constitutively cross-disciplinary and embodies the skills, objectives, and principles of social sciences, citizenship education, and science. Moreover, a fundamental task of an ESD action or project is developing the reciprocal and multi-layered interconnections between the participants and the issues emerging from the places and territories in which they live. In this regard, ESD needs a place-based approach that looks at the spatial nature of socio-environmental relations. As D. Tilbury (1997, p. 108) reminds us, "Most significantly, environmental problems have a spatial dimension, which makes geographical understanding crucial".

The active involvement of place and participants in daily life is the basis for ESD. Place-based education which effectively combines pedagogical principles and individual and social experiences, displays distinct characteristics (Gruenewald 2008, p. 314):

> It emerges from the particular attributes of places, it is inherently multidisciplinary, it is inherently experiential [and] it connects place with self and community.

The relevance of geographical education, and therefore of place-based education, is confirmed by its substantial correspondence with the ESD pedagogical principles (UNESCO 2017): critical thinking, dealing with systems, facing the future, bonding, and stewardship.

ESD and small island states

Small island states are on the front line of climate change due to their low-lying geography, delicate ecosystems, and threats from natural disasters, such as the 2004 Indian Ocean earthquake and tsunami. SIS are therefore at what Crossley and Sprague (2014) refer to as "the sharp end" of environmental uncertainty. Particularly at risk are SIS such as the Maldives in the Indian Ocean and Tuvalu in the Pacific, which face inundation with as little as a one meter-rise in sea level. Another threat comes from the erosion of coastal areas due to the increasing intensity and severity of storms. These threats place livelihoods in fishing, agriculture, and tourism at risk (Hiebert 2013).

Living at this sharp end of environmental threats is a fact of life for small states worldwide. Given these circumstances, there is a need to accelerate the promotion of ESD implementation in SIS to strengthen social and economic commitments to sustainability (University of Mauritius 2009; UNDP 2005).

In considering the urgency of the environmental challenges SIS face, Crossley and Sprague (2014) stress the importance of education in promoting sustainable development. While sustainable development requires a cross-sectoral approach, they note, education "often fails to feature in such discussions" (p. 90). The interconnectedness of environmental challenges with economic and social development has also been recognized (Crossley and Sprague 2014; Hiebert 2013). While education alone cannot achieve sustainable development, it does play a critical role (Hiebert 2013). Crossley and Sprague (2014) offer examples of successful and emergent practice and contend that others may build on and learn from this comparative experience. Work on sustainable development, they argue, has most often focused on the more immediate conservation and environmental needs of SIS at the cost of overlooking the potentially far-reaching role of education.

As stated earlier, the primacy of the CCA framework in the Maldives massively influences both environmental and development policies (Malatesta and Schmidt di Friedberg 2017). Both official documents and reports and the international debate on island studies emphasize the need to foster integration between environmental and development policies and the empowerment of local communities. The objective is the promotion of development strategies based on the active involvement of all social actors and stakeholders, starting from the socio-environmental challenges the local population faces daily. In this regard, a place-based education and community actions can play a fundamental role in increasing the resilience of island communities.

The Maldives: Improving the quality of education

While the Maldives has been cited as a development success story (Aturupane and Shojo 2012), it faces numerous serious challenges in promoting quality education to its citizens. The geographic and demographic dispersion of the country presents significant challenges to distributing resources equitably; adding to this burden is a shortage of qualified teachers. The traditional reliance on rote learning methods is in stark contract to the action oriented transformative teaching required in ESD. Shareef (2016) notes that the focus of the education system has been to transmit a body of knowledge to students and points to the pressure on schools to focus on results and prepare students for the O- and A-level examinations. Although improving the quality of education has been a major focus of the education system (Aturupane and Shojo 2012), initiatives that take place in a context that relies heavily on examination results have implications for the sort of pedagogy that students experience:

> An important aspect of the debate on education is related to the pedagogy of teaching and the highly examination-oriented system that is followed, which leads to high competition among schools to have their students ranked in the top ten positions in the Republic. It is argued that overall pass rates and performance of students are compromised, as attention gets focused on individual top achievers for schools (UNDP 2014, p. 75).

Adam et al. (2016) likewise reported that instructional methods were strongly influenced by maximizing performance in tests. This leads to pedagogical practices in which students are passive recipients of information and grades are emphasized over learning and understanding (Shiuna and Sodiq 2013). A major reform has been the implementation of an outcomes-based curriculum (NIE 2015) promoting a holistic approach to education that has been described as "child-centred" (UNICEF 2010, p. 16) and is structured around key competencies, key learning areas, and specific pedagogical approaches (Figure 1).

Its integrated framework and focus on eight key competencies are a distinct and deliberate shift from the fact-based objectives Fittell (2014) described in the previous syllabus. The key competencies and pedagogical approaches of the National Curriculum Framework (NCF) align with active learning and LCP. The NCF provides greater flexibility for teachers (UNICEF 2010) and presents them with the possibility of integrating subjects. In the Maldives, transitioning to LCP has been a challenging process, with well-documented gaps between policy and practice (Di Biase 2019a; Shareef 2016).

The NCF provides a clear framework for promoting ESD and regards effective pedagogy as having the following dimensions, which align with ESD's holistic and transformative aims: linking with prior learning, making learning meaningful, catering to individual differences, creating a positive learning environment, and fostering reflective practice (NIE 2015). Each of these explicitly endorses LCP, yet shifting from the previous prescriptive syllabus, which was organized into discreet chunks of learning, to the more holistic NCF has been difficult for teachers (Ministry of Education 2019). Of particular relevance to ESD is the key competency of "using sustainable practices". According to Shareef (2016), this competency aims to raise awareness of the need to engage in sustainable practices and for students to learn skills for responsible conservation. He maintains that the incorporation of this competency into the NCF signals the government's commitment to ESD yet will also require the reorienting of many existing education practices (Shareef 2016).
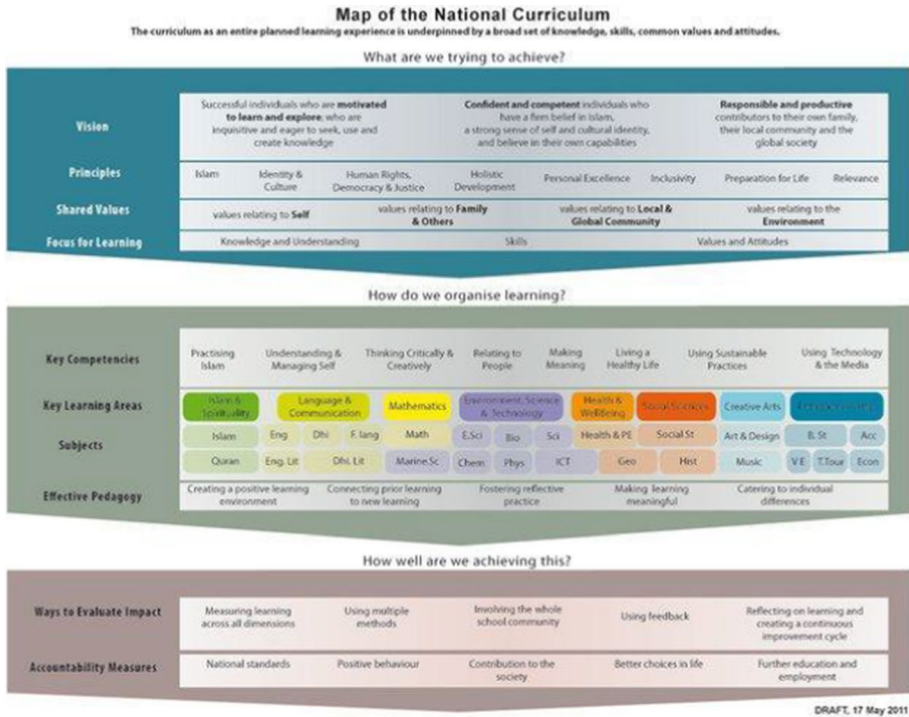
Map of the National Curriculum

The curriculum as an entire planned learning experience is underpinned by a broad set of knowledge, skills, common values and attitudes.

Figure 1 Map of the National Curriculum Framework
Source Ministry of Education (2015)

Maldives and education for sustainable development

A report focusing on environmental education in the Maldives made the following recommendations (Smith et al. 2006, p. 2):

- Environmental Education needs to be integrated into the curricula to increase both knowledge and action around environmental management in the Maldives.
- A student-centred approach is needed to foster critical thinking and explore issues of concern.
- Environmental Education needs to be action oriented.

These recommendations speak to broader challenges of reorienting teaching approaches to incorporate active learning and LCP (Di Biase 2019b). The action-oriented approach advocated by Live and Learn to promote ESD is consistent with the NCF and the promotion of learner-centered, active learning pedagogical approaches.

Since this 2006 report, environmental science has been subsumed into the broader category of science within the NCF. It is therefore important to champion initiatives that promote ESD in Maldivian schools in order to emphasize aspects of environmental education that were more visible when they were part of environmental science. Further, these recommendations, while developed before the NCF was implemented, are consistent with the pedagogical dimensions and learner-centered approach to key competencies implicit in the NCF.

Shareef (2010) considers the contrast between the action-oriented pedagogy inherent in ESD and examination-oriented approaches prevalent in Maldivian schools. The NCF is the most recent important policy outlined to support and facilitate quality education for the Maldives. It reflects the contemporary thinking skills needed for the students to succeed in life, consistent with the aspirations of ESD. This reform is intended to provide "rich experiences in learning with equal emphasis on creating knowledge, developing skills, and demonstrating values and positive attitudes which will enable to develop the students [sic] holistically" (NIE 2015, p. 5). However, despite the implementation of the NCF, the emphasis in schools continues to be to "transmit effectively a body of knowledge to children" (Shareef 2016, p. 145). This brings into sharper focus the need to transform predominant teaching priorities and practices in schools (Di Biase and Maniku 2020; Shareef 2010) and the challenges of doing so (Di Biase 2015; Schweisfurth 2013). As the promotion of ESD gains traction (Grosseck et al. 2019), the impetus to understand and take action toward the goal of sustainable development interacts with the goal of improving the quality of education. This development, much needed in the Maldives, is aligned with implementing the NCF and promoting pedagogical reform.

In this article, we will now report on an initiative that, while promoting environmental awareness, also placed students in the role of active learners. It provides an example of what ESD could look like within the context of the Maldives education system and provides some insights into how to challenge the prevailing content-driven, teacher-transmitted pedagogical approach. It also speaks to Crossley and Sprague's (2014) "islands of inspiration" and their celebration of examples of good practice.

Playing with solar: A community's ESD action

The transition toward a sustainable energy production and waste management system is a priority of mitigation and, broadly speaking, of environmental policies at the local and national scale (Mohamed et al. 2016). Specifically, the use of fossil fuels for energy production is responsible for 94% of CO_2 emissions. Despite this, a scenario dominated by the islands' dependence on non-renewable energy continues to prevail across the archipelago. Recently, Malatesta (2021, p. 66) described the Maldivian energy supply system as follows:

> The electric supply system is largely provided (89% of the overall amount) by onsite powerhouses that burn fossil fuels (kerosene and diesel) … There are 186 powerhouses located on the inhabited islands … 61% of the population lives on the outer islands with a significant number of villages settled on very small islands (with a surface of less than 20 hectares), and 91 islands have a population of less than 1000 inhabitants. The onsite powerhouses consume an average of 220 litres of fuel per day, on the islands with a population of less than 500 inhabitants, and over 400 litres of fuel per day on the islands with a population between 500 and 1000 (Ministry of Environment & Energy 2018). Currently, powerhouses can assure the energy autonomy (based on diesel and kerosene consumption) of villages. Whilst this strategy might discourage financial and political efforts for technological innovation on local islands, public and private initiatives have recently been carried out to develop the generation of energy from renewable sources [mainly solar powerhouses] which, according to ministerial data, currently stands at 11%.

The island of Magoodhoo (Faaf Atoll), located approximately 135 km southwest of the Greater Malé region, falls fully within these demographic and energy consumption ranges. In 2009, in collaboration with the National Government and the Island Council, the University of Milano-Bicocca opened the Marine Research and High Education Center (MaRHE) in Faaf-Magoodhoo. The main purpose of the MaRHE Center is to carry out research and teaching activities in the environmental sciences and marine biology, the science of tourism, and human geography, to teach how to protect maritime and insular fragile environments, and how to use and manage its resources in a responsible way. The MaRHE Center has also been actively involved in public engagement and education projects at both the local and national levels. In 2013, supported by Caritas Italiana, the MaRHE Center and the Faaf-Magoodhoo Island Council completed the installation of a photovoltaic powerhouse capable of minimizing the island's dependence on kerosene consumption.

As a follow-up to this initiative, the MaRHE Center planned and developed Playing with Solar (PWS), an ESD project carried out in 2012-13 to promote awareness of renewable energies, solar in particular, among the island's inhabitants and to activate the concrete engagement of children and adolescents as mediators between the local community and the impacts of technological change. As Blanchet-Cohen has noted, children and adolescents "have unique realities and perspectives to offer as experts on their own lived experiences" (2008, p. 257). The PWS project involved a group of twenty primary and secondary school students asked to tell, through videos, spots and clips, the story of their island during the installation of solar panels and the conversion to a new energy system. The project involved Faaf-Magoodhoo Public School, with the informal support of the local community.

Methodological framework

PWS mixed a set of methods and strategies eliciting participants' sense of place through a sequence of video storytelling workshops. The project targeted three main objectives:

- Increase students' awareness and knowledge of renewable energy-related subjects
- Teach students the preproduction process
- Encourage a collective of video makers able to carry out future projects autonomously.

Recently, Gabriel R. Valle (2020) underlined the crucial function of "narratives of place", generally in place-based education and more specifically in ESD and environmental education. Within a group, both individual and collective narratives and representations contribute to shaping participants' sense of place. Sharing images (generally visual objects) and using storytelling and mapping may act as crucial tools during this process. As Valle (2020, Introduction, para. 8) wrote:

> Storytelling and mental maps provide a foundation for students to discover common ground despite their perceived differences, which encourages the emergence of 'other' voices.

The construction of a sense of place, while combining inhabitants' perspectives, knowledge, habits, and representations, is both an individual and collective process. Moreover, the sense of place reinforces the awareness of the constant interrelations between humans and the environment. According to Valle, a place is a socially constructed experience of space that "includes embedding oneself in the environment as part of a sensory embodied experience with other" (2020). The construction of a group's narrative of place starts from

sharing subjective images (through maps, videos, pictures, essays) and helps individuals to understand their role in the place in which they live.

Coordinators asked students to tackle the following task: *Please tell, through a video, people who do not know Magoodhoo the change your island will experience after the solar panels start functioning.* The project aimed to activate negotiation and sharing among the students of their visions, representations, and knowledge (even preconceptions). The core theme of PWS was "the change"—the change of habits, practices, and even representations of the Magoodhoo population—told through the voices, ideas, and perceptions of their young citizens while facing a transition in the human ecology of the island.

Starting from the visual representation of the island as imagined by the students, PWS addressed a crucial issue in social-environmental interactions and therefore in ESD: the response that a social system activates to deal with change. The students, through video storytelling, built and communicated their "sense of place" and described the impact on a community of a transition toward sustainability.

The project followed six phases: (1) in a preliminary stage, participants were trained in basic shooting and editing techniques, as well as in writing and storytelling; (2) a writing contest was held, in which the group as a whole voted for the best five stories; (3) the five winners of the writing contest became directors, overseeing the work of five groups; (4) each group then had to film a specific video product (a short movie, documentary, music video clip, advertisement, or news report) during which students went through the prepro-duction process, wrote their own stories, scouted locations, edited, and finalized the videos; (5) all the teams premiered their films in front of their schoolmates, receiving feedback; and (6) thanks to the formal support of the Magoodhoo Island Council, the local Social Center hosted the public premiere of the five videos.

The groups also opened a web diary to share their experiences with other schools and potential audiences living across the archipelago. The outcomes can be seen both in the blogs that describe and reflect on the process and the videos that were produced (http://playingwithsolar.blogspot.com/2013/).

The PWS blog was designed to host four main sessions: (1) an always opened window with a synthetic overview of the project; (2) a repository where the coordinators posted outcomes, videos, and comments and gave updates on the phases of the project; (3) a col-lective PWS diary, edited by the coordinators, which served as a notice board to inform the Faaf-Magoodhoo community on the episodes' settings and production stages; and (4) a space hosting participants' posts.

This design converted the blog into a multifunctional environment: a tool to progres-sively document the PWS stages; a showcase of ideas, images, and writings; and above all, a space fostering participants' free expression. The design and updating of the blog were also key to helping coordinators easily and directly connect the story of PWS with ESD competences, as shown in Table 2.

ESD in practice

Curricular and pedagogical outcomes

The PWS project exemplifies the key competency of 'using sustainable practices'. As Shareef (2016) asserts, this competency also encompasses awareness about conserva-tion. In line with Crossley and Sprague's (2014) celebration of islands of success, PWS

demonstrates what can be achieved both in promoting sustainability and enabling students to become active learners. Following their contention that education has been largely missing from the discussion, the PWS project illustrates a successful ESD initiative in the local island context. It also illustrates ESD as a transformative approach, elucidating how the holistic underpinnings of the NCF can be enacted.

While the key competencies, with their vastly different orientation from the previous fact-based syllabus, present a challenge to teachers, this project illustrates how key competencies can be used to underpin rich learning experiences that promote active learning. For example, the PWS project provided an opportunity to meet outcomes within the Science strand Energy and Change that could be integrated with the Social Studies sub-strand Use of Resources from the NCF, as shown in Table 1.

These are examples of how one problem-based project can address a number of outcomes simultaneously. However, this approach requires a shift from viewing learning as the transmission of knowledge or the completion of textbook pages to one that allows multiple and open-ended responses to be validated. Given the problem-solving nature of the open-ended task, it also aligns with several of the key competencies indicated in Table 2, with examples from the project blog.

Further, the pedagogical dimensions are embedded within such a holistic problem-based learning opportunity. Using the example of 'making learning meaningful,' the solar activity was both relevant and meaningful to the island community in their aspiration to transition from diesel to solar power. It has direct application to their lives as members of the island community. It requires personal engagement and provides students with the opportunity to tell a story.

An adaptation of Bronfenbrenner's ecological framework (1979), shown in Figure 2, provides a conceptual framework for understanding these interactions and a way of determining the layers of influence in promoting ESD in a context such as the Maldives. The nested model acknowledges the layers that can influence the pedagogical decisions that teachers make, which in turn impact the extent to which ESD is enacted in Maldivian schools. These layers include the mesosystem—the school and local island context; the ecosystem—the Ministry of Education and NCF policy environment; and the macro-system—the Maldives as a developing small island state. All this takes place within the era of SDGs and targets related to ESD.

Reorienting to ESD is a challenging process that involves transitioning to new transformative pedagogies. To facilitate ESD in Maldivian schools depends on the pedagogical decisions that teachers make. These are influenced by the school and island context, as well as the wider policy environment. At the meso-level, Maldivian island communities have traditionally demonstrated a sense of community, togetherness, and cohesion (UNDP 2014). The very "islandness" of the country means people have a strong connection with the particular island of their birth, resulting in close-knit communities. Further, island schools are central to island life. The priorities of each school community provide a context in which teaching and learning take place. Moreover, at this meso-level, place-based education and the related community actions are fundamental to how island communities interact and provide a context for demonstrating the value of ESD to the community.

At the ecosystem level, the NCF provides an enabling framework within which ESD can be incorporated into learning experiences for students. The PWS project provides an example of what is possible in promoting understanding about sustainability practices and environmental education underpinned by transformative learner-centered pedagogy. The examples in Table 1 and 2 illustrate how a project like PWS can be incorporated into lessons through both pedagogical approaches and linking to relevant curriculum outcomes

Table 1 Indicative curriculum links for PWS

Science	Social Studies	English
Key stage 1 Strand: energy and change Sub strand: energy and its impact Sub strand: wWise Use of Energy	Key stage 1 Strand: the economic world Sub strand: use of resources	Key stage 1 Strand: speaking and listening Sub strand: communicative purposes
Key stage 2 Strand: energy and change Sub strand: energy and its impact Sub strand: types of energy, energy sources, and receivers Sub strand: electricity	Key stage 2 Strand: the economic world Sub strand: use of resources	Key stage 2 Strand: speaking and listening Sub strand: communicative purposes
Key stage 3 Energy and thermal physics • Forms of energy and ways to reduce consumption of energy. • Energy transfers and law of conservation of energy. • Types of energy and transformation of energy • Energy, work done and power	Key stage 3 Process strand: investigation, communication and participation Sub-strand: human systems and interactions Outcome: PPE2.3: demonstrate awareness and understanding of sustainability and the approaches to retain sustainability for future purposes	Key stage 3 Strand: speaking and listening Sub strand: communicative purposes

Table 2 Indications of key competencies in evidence in the Playing with Solar Project

Using sustainable practices	The PWS initiative was premised on raising awareness about sustainable practices. This knowledge was linked directly to the context of the local island and the promotion of solar energy within the community. http://playingwithsolar.blogspot.com/2013/
Thinking critically and creatively	The ability to problem-solve and think critically and creatively was central to working on the PWS project. http://playingwithsolar.blogspot.com/2013/01/
Making meaning	The outcome of the project was communicated by each group. The use of language and other communication can be seen in the blog that records the process and description of the outcome. http://playingwithsolar.blogspot.com/2012/12/script-and-storyboard-reviewing.html
Using technology and media	The project relied on the use of technology in "playing" with solar and creating the video. http://playingwithsolar.blogspot.com/2013/
Understanding and managing self	As seen in the blogs, individual motivation was central to the successful completion of the projects in each group. This includes the ability to plan, evaluate one's own performance, and develop skills for lifelong learning. http://playingwithsolar.blogspot.com/2012/
Relating to people	The project is completed in groups, so both interpersonal and intrapersonal skills are required for its successful completion. http://playingwithsolar.blogspot.com/2012/12/wild-cat-team-gains-confidence.html
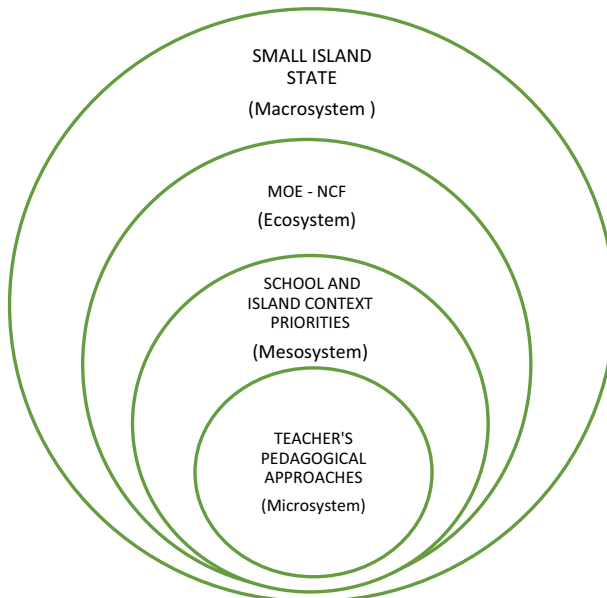
Figure 2 An adaptation of Bronfenbrenner's ecological framework indicating influences on enacting ESD

to promote holistic learning opportunities and capacity for meaningful integration across subjects.

Social outcomes

In this article, we address both the social and pedagogical outcomes of PWS. Aguilar (2018) proposed a community approach to ESD, stressing the involvement of local communities as fundamental to sustainability and education as stated in the Roadmap for Implementing the Global Action Programme on Education for Sustainable Development (UNESCO 2014). The political and pedagogical vision underlying this perspective overcomes the individual and didactic approach to ESD and moves toward a social and participatory one. Andrews et al. reminded us that community-based education "implies a plan created as a result of community involvement and designed to match community interests" (2002, p. 164). According to this paradigm, the growth of individual and collective environmental awareness becomes a tool to empower inhabitants' place-bonding and stewardship. We can define PWS as a community project. The videos produced by the groups, in fact, told not only of the change but of the response of an entire community to a future project: to a vision of sustainability. Moreover, PWS was possible due to the formal and informal cooperation and negotiations among social actors: the Island Council, the MaRHE Center, parents and relatives, the public energy provider, and, of course, the students. The project involved dozens of people in a community of a few hundred inhabitants. In this way, PWS overcame a purely didactic dimension, converting an environmental awareness project into the storytelling of an entire island.

Stakeholders' involvement is key. First, because the implementation of technological and infrastructural measures very often impacts places and social systems as an inherently top-down process. In this case, the link between the installation of solar panels and a community ESD project has limited this risk. Furthermore, PWS elicited a high level of cooperation among the various actors. This cooperation fostered the design and implementation of other community-based projects: For example, between 2013 and 2014, the MaRHE Center developed a participatory waste management action involving the Women's Development Committee, a public institution representing the female population of local islands (Malatesta et al. 2015). Finally, as argued by Blanchet-Cohen (2008), such a project stimulates adolescents' environmental involvement through three steps: (1) empowering social and personal engagement on a local issue of common interest affecting the everyday life of the whole community; (2) questioning, in this case, the impact of new technologies; and (3), taking a stance by telling their personal and collective story. Furthermore, the design and creation of narrative (visual) products that communicate the vision of adolescents on a sustainability issue is a way to stimulate their agency on local political issues.

Conclusions

As a small island state and living at the sharp end of environmental threats (Crossley and Sprague 2014), the Maldives provides an interesting context in which to explore ESD. With its focus on improving the quality of education, SDG 4 provides a global context in which the advancement of ESD can be enacted. Target 4.7 specifically prioritizes the need for attention to ESD.

Considering both the environmental and education principles embedded in this exploration, the PWS project illustrated here provides an example of a project that prioritizes sustainable development and actively engages with the community while at the same time aligning with the vision underpinning the Maldives NCF and operationalizing the key competencies and pedagogical principles.

Education, as noted, has a pivotal role to play within the wider agenda of promoting sustainable development, and in the Maldives, a reorientation of the education system to embrace transformational pedagogical approaches and opportunities for critical and creative thinking are required. The PWS project discussed here is an example of how such problem-based learning opportunities can be aligned with the NCF in contrast to textbook-transmission models of teaching that prevail in Maldivian schools (Shareef 2016). Because these challenges are not unique to the Maldives, our discussion is intended to champion this successful initiative featuring ESD. It also demonstrates how the community can be engaged to promote agency and embrace innovation.

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Publisher's Note   Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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